APPENDICES

APPENDICES

APPENDIX A / Error Messages

There are three kinds of error messages you might get while using your Computer:

- Boot Errors, such as "BOOT ERROR DC." See the BOOT ERRORS TABLE for more information.
- Operating System Errors, such as "ERROR 24" or "FILE NOT FOUND." To get a brief description of a numbered error, type "ERROR" followed by the error number displayed. For example, type:

  ERROR 31 <ENTER>

  and your screen will show:

  PROGRAM NOT FOUND

  For more information, see the SYSTEM ERRORS TABLE.
- Application Program Errors -- see your application program manual.

When an error message is displayed:

- Try the operation several times.
- Look up boot errors and operating system errors in the following tables and take the recommended actions. See your application program manual for explanations of application program errors.
- Try using other diskettes.
- Reset the Computer and try the operation again.
- Check all the power connections.
- Check all interconnections.
- Remove all diskettes from drives, turn off the Computer, wait 15 seconds, and turn it on again.
- If you try all these remedies and still get an error message, contact a Radio Shack Service Center.

Note: If there is more than one thing wrong, the Computer might wait until you correct the first error before displaying the second error message.

RSSC = Radio Shack Service Center

SYSTEM ERRORS TABLE

Error Code	Description	Explanation/Action
6	Attempt to open a file which hasn't been closed.	Close file before re-opening.
28	Attempt to read past end of file.	Record Number specified is past the EOF.
34	Attempt to use a non program file as a program.	File specified for execution is not a program file or an illegal load address was given.
133	Bad CRT number.	For multi-user only.
1	Bad function code on SVC call or no function exists.	Check function code number used on an SVC call.
132	Bad partition number.	For multi-user only.
129	Bad SVC-Block format.	Check format of SVC-block for errors.
	BOOT ERROR	See BOOT ERROR TABLE
4	CRC error during disk I/O (input/output) operation.	Try operation again, using a different diskette. If problem occurs frequently call RSSC.
2	Character not available.	No record or character was available when the SVC was called.
16	DCB is modified and is unusable.	DCB (used in machine-language programming) has been modified since last disk access (while the file was open).

Error Code	Description	Explanation/Action
41	Data lost during disk I/O (input/output). Hardware fault.	Contact a Radio Shack Service Center.
135	Debug Not Configured.	Include Debug at configuration time.
136	Device not available.	Device already assigned For multi-user only.
137	Device Unassigned.	For multi-user only.
17	Directory read error.	Error occured while trying to read directory. Use a different diskette.
26	Directory space full.	Number of filenames exceed the amount set when diskette was formatted.
18	Directory write error.	Error occured while trying to write to the directory. Use a different diskette.
33	Disk space allocation can't be made because of fragmentation of space. (not used on TRSDOS-II)	Use a different diskette or copy files to a clean diskette to reduce fragmentation.
27	Disk space full.	No available space on diskette.
8	Disk drive not ready.	Drive door open or diskette not in drive. On thinline drives, use TRSDOS-II, TRSDOS-16, or patched version of TRSDOS 2.Øb.

Error Code	Description	Explanation/Action
15	Disk is write protected.	Use a diskette with a write-enable tab on it.
5	Disk sector not found.	Try a different diskette.
128	DO-Nesting not allowed.	A 'DO' command was encountered within a DO file.
25	File access denied due to password protection.	Incorrect password given for protection level -- See ATTRIB in the Model 16 Owner's Manual.
11	File already in directory.	Filename already exists as a directory entry. Kill existing file or choose another filename.
24	File not found.	Filename given not found on available diskettes or file is incorrect type for desired operation.
49	Hardware fault during disk I/O (input/output).	Contact a Radio Shack Service Center.
38	I/O (input/output) attempt to an unopen file.	Open file before access.
39	Illegal I/O (input/output) attempt.	On Thinline drives -- use patched version of TRSDOS. Can be caused by an I/O attempt to a differently formatted diskette. Format diskette under current version of TRSDOS or use FCOPY.

Error Code	Description	Explanation/Action
131	Illegal Address.	SVC block or SVC argument is not within the memory range.
138	Illegal device name.	Device name specified for ASSIGN not valid.
7	Illegal disk change.	The system detected an illegal disk swap.
144	Illegal File Type	File type used is not the type required by the system (VLR or FLR).
134	Illegal operation	For multi-user only.
19	Improper file name (filespec).	Filespec given does not meet TRSDOS standard file specifications.
48	Incorrect command parameter.	Option or argument given in command is incorrect.
9	Invalid data provided by caller.	Data stream to be processed has illegal characters.
5Ø	Invalid Space Descriptor.	Try a different diskette.
1Ø	Maximum of 16 files may be open at once.	Too many files opened at one time.
35	Memory fault during program load.	Program not loaded correctly, possibly because of faulty memory or because a bad load address was given.
12	No drive available for an open.	No on-line drive is: a) write enabled or b) has enough space to create a new file.

Error Code	Description	Explanation/Action
Ø	No error found.	No error occurred.
3Ø	No more extents available (16 maximum). (not used on TRSDOS-II)	Data on diskette too fragmented, copy files to a clean diskette.
46	Not applicable to VLR type files.	Operation performed not valid for VLR files.
2Ø	Not Used.	
21	Not Used.	
22	Not Used.	
23	Not Used.	
13Ø	Odd address.	Address required by SVC block must be even.
37	Open attempt for a file already open.	File specified for open is already open.
3	Parameter error on call.	Parameter incorrect or required parameter (option) missing.
36	Parameter for open is incorrect.	Check OPEN statements or DCB for errors.
31	Program not found.	Program specified not found on available volumes.
44	Printer fault (may be turned OFF).	Check connections, power, ribbon, etc.
45	Printer not available.	Check connections, power, ribbon, etc.

Error Code	Description	Explanation/Action
42	Printer not ready.	Check connections, power, ribbon, etc.
43	Printer out of paper.	Check printer's paper supply.
29	Read attempt outside of file limits.	Use valid record numbers.
47	Required command parameter not found.	Required option or argument missing in command.
4Ø	SEEK error.	Data cannot be read from diskette -- faulty media. Try a different diskette.
14Ø	Undefined	
141	Undefined	
142	Undefined	
32	Unknown drive number (filespec).	Drive number specified not a valid drive number.
51-127	Unknown Error Codes.	
139	User Stack Overflow	Overflow occured in user stack during SETBRK SVC or SETTRP SVC operation.
13	Write attempt to a read only file.	File was opened for read only, not read/write.
14	Write fault on disk I/O (input/output).	Error occurred during a write operation -- try a different diskette. If problem continues - RSSC.
143	SVC Table Overflow	For multi-user only.

BOOT ERROR TABLE

Error Code	Description	Explanation/Action
BOOT ERROR CK	Defective ROM (Checksum Error)	Contact a Radio Shack Service Center
BOOT ERROR CT	Defective CTC Chip	Contact a Radio Shack Service Center
BOOT ERROR DC	1. Defective diskette. 2. Floppy disk expansion unit not on. 3. Defective FDC Chip or Drive.	1. Try a different diskette. 2. Turn on floppy disk expansion unit. 3. Contact a Radio Shack Service Center.
BOOT ERROR DM	Defective DMA Chip	Contact a Radio Shack Service Center
BOOT ERROR DØ	Drive not ready. 1. Improperly inserted diskette. 2. Defective diskette. 3. Defective drive.	1. Insert diskette again and reset the Computer. 2. Try a different diskette. 3. Contact a Radio Shack Service Center.
BOOT ERROR HA	Controller Error. Aborted command: Problem during boot-up of hard disk.	Re-initialize hard disk or contact a Radio Shack Service Center.
BOOT ERROR HC	CRC Error. Invalid data in data field.	Re-initialize hard disk or contact a Radio Shack Service Center.

Error Code	Description	Explanation/Action
BOOT ERROR HD	Controller Error. Busy not reset.	Re-initialize hard disk or contact a Radio Shack Service Center.
BOOT ERROR HI	CRC Error. Invalid data in ID field.	Re-initialize hard disk.
BOOT ERROR HM	Data address mark not found.	Re-initialize hard disk
BOOT ERROR HN	ID not found. No Boot Track.	Re-initialize hard disk
BOOT ERROR HØ	Track Ø Error on hard disk	
	1. Didn't find Track Ø before time-out.	1. Reset the Computer
	2. Secondary hard disk drives not turned on	2. Turn on your secondary hard disk drives
BOOT ERROR HT	Time-out while waiting for READY.	
	1. Hard disk drive not powered up.	1. Follow correct power up procedure: turn on hard disk first.
	2. Hard Disk Drive isn't turned ON and ready within 1Ø seconds after Computer.	2. Reset the Computer
	3. Hard Disk Drive is disconnected.	3. Connect the hard disk drive or operate under floppy disk control

Error Code	Description	Explanation/Action
BOOT ERROR LD	Lost Data during read -- FDC (Floppy Disk Controller) or Drive fault.	Try another TRSDOS diskette or contact a Radio Shack Service Center.
BOOT ERROR MF	Defective RAM in address range H'1ØØØ'-H'7FFF'.	Contact a Radio Shack Service Center.
BOOT ERROR MH	Defective RAM in address range H'8ØØØ'-H'FFFF'. (64K Computers only)	Contact a Radio Shack Service Center.
BOOT ERROR ML	Defective RAM in address range H'ØØØØ'-H'ØFFF'.	RSSC
BOOT ERROR PI	Defective PIO Chip	RSSC
BOOT ERROR RS	The diskette in Drive Ø is not Radio Shack Model 16 or Model II Operating System format.	1. Insert a TRSDOS, TRSDOS-II or TRSDOS-16 formatted diskette into Drive Ø and reset the Computer. 2. Remove diskettes and turn power off. Wait 15 seconds and turn on the system again.
BOOT ERROR SC	CRC Error. Invalid data on diskette or defective diskette.	Try a different diskette.

Error Code	Description	Explanation/Action
BOOT ERROR TK	Record not found on bootstrap track. Improperly formatted or defective diskette.	Re-format your diskette or try a different diskette.
BOOT ERROR Z8 (68ØØØ Memory Fault at Page Address=xxxxxxx)	Defective CPU. Memory Fault. xxxxxx is the hex addr of 1K block where fault occured.	RSSC. RSSC
NOT A SYSTEM DISK	Diskette in Drive Ø isn't a TRSDOS, TRSDOS-II or TRSDOS-16 Operating System Diskette	Insert a TRSDOS, TRSDOS-II, or TRSDOS-16 Operating System diskette into Drive Ø

APPENDIX B / The Configuration Command File

Whenever TRSDOS-16 starts up or is reset, it looks for a file named CONFIG16/SYS. This "configuration command file" tells TRSDOS-16 to link in certain extra operating system programs.

CONFIG16/SYS should be present on the primary disk device (Drive Ø or Drive 4). It contains these directives:

```
INCLUDE RUNCOBOL
INCLUDE DEBUG
END
```

which tell TRSDOS-16 to link in the RUNCOBOL program and the DEBUG program.

You may create your own CONFIG16/SYS file, or modify the existing one to meet your needs, by using EDIT16.

The CONFIG16/SYS file on your TRSDOS-16 diskette does not include the RUNCOBOL file as stated.

SAVING THE EXISTING CONFIG16/SYS FILE

Before creating a new CONFIG16/SYS file, you will probably want to save the existing one by renaming it.

For example:

```
RENAME CONFIG16/SYS:Ø TO DEBCOB/CFG:Ø
```

renames the default configuration file. (The new filename tells you it includes both DEBUG and RUNCOBOL modules.

After renaming the existing CONFIG16/SYS file, you can create a new one.

Since you "saved" the existing file, you can use it again. To do this, rename the present CONFIG16/SYS file (if you want to save it) and then rename DEBCOB/CFG back to CONFIG16/SYS:

```
RENAME DEBCOB/CFG:Ø TO CONFIG16/SYS:Ø
```

TO EDIT OR CREATE CONFIG16/SYS

Use EDIT16 to edit or create a CONFIG16 command file.

1. Type:

   EDIT16 <ENTER>

   and the Editor's Command mode prompt will be displayed:

   C?.....

2. To insert commands into the command file, you must get in the Insert mode, type:

   IN <ENTER>

   The Editor will display the I? prompt, indicating that you are in the Insert mode.

3. You are now ready to insert the names of the programs you want linked to TRSDOS-16.

   Comments may be used. They are indicated by an asterisk (*) in the first column.

   The key word **INCLUDE** tells TRSDOS-16 the name of the program. The syntax for the INCLUDE statement is:

   INCLUDE filename

   The default extension for filespec is **/SYS**; it is optional. Drive numbers, disk ID and Passwords are not permitted.

   Programs are loaded sequentially in memory in the order they are encountered in the CONFIG16/SYS file. The maximum number of programs that may be INCLUDEd is 15.

   The programs must be resident on the primary drive (Drive Ø or Drive 4).

   The list is concluded with an **END** statement.

For example:

```
* This is the Configuration File for DEBUG
INCLUDE DEBUG
END
```

tells TRSDOS-16 to link only the DEBUG program. The first line is a comment and is not executed by TRSDOS-16

4. When you are finished inserting, press <ENTER> to exit the Insert Mode.

5. Save the file with the following command:

```
SA CONFIG16/SYS <ENTER>
```

6. You now have a new CONFIG16 command file that TRSDOS-16 will use when it powers up or resets.

CONFIGURATOR ERROR MESSAGES

When the Configurator lists a line generating an error, it prints an error message directly underneath the line number. Preceding the message, it inserts three asterisks.

In cases of certain syntax or file I/O errors, the Configurator also marks, with a dollar sign ($), where in the line the error occurred.

For example:

```
Ø11 INCLUBE RUNCOBOL
    $
*** Illegal Command
```

shows a syntax error in the spelling of INCLUDE.

There are three catagories of Configurator error messages:

A. Configuration Control File Errors
B. Configuration Command Errors
C. Completion Errors

A. Congifuration Control File Errors

These errors are FATAL. If one of these errors occur, the Configurator could not properly execute the CONFIG16/SYS file. TRSDOS-16 will still be displayed but certain defaults will have occured:

1. No programs have been INCLUDED
2. DEBUG is kept resident (if available)
3. Any memory not occupied by DEBUG and the resident Operating System is available to the user.

Use EDIT16 to correct the error (or create a new configuration file) and reset the system.

Can't Open CONFIG16/SYS: TRSDOS Error Code = nnn

Look up TRSDOS-16 Error Code **nnn** in Appendix B and take appropriate action.

Can't configure system: File CONFIG16/SYS not proper format

The CONFIG16/SYS file is not a VLR type file.

Can't configure system: File CONFIG16/SYS not found

TRSDOS-16 could not find the CONFIG16/SYS file.

I/O Error on File CONFIG16/SYS: TRSDOS Error Code = nnn

Look up TRSDOS-16 Error Code **nnn** in Appendix B and take appropriate action.

B. Configuration Command Errors

These errors occur when a command cannot be processed by the Configurator. If one of these error occurs, the Configurator will continue to process the command lines. However, the desired result of the configuration file may not have been accomplished. For example, an INCLUDE file may have been left out.

Can't INCLUDE program: TRSDOS Error Code = nnn

The Configurator cannot load the program because of an I/O error. Look up the TRSDOS-16 Error Code in Appendix B.

Can't INCLUDE program: Out of Memory

More resident programs were requested than will fit into user memory.

Can't INCLUDE program: Program already configured

This error occurs any time a program is included twice.

Too many INCLUDED programs: this request ignored

This error occurs if more than 15 programs are included. The command line that is flagged is ignored (treated as a comment).

C. Completion Error

***** CONFIGURATION ABORTED *****

This message appears when the configurator could not finish processing the CONFIG16/SYS file because of an I/O error.

ABOUT THE CONFIGURATOR

The Configurator is invoked whenever the 68ØØØ processor is initialized. It performs several important functions:

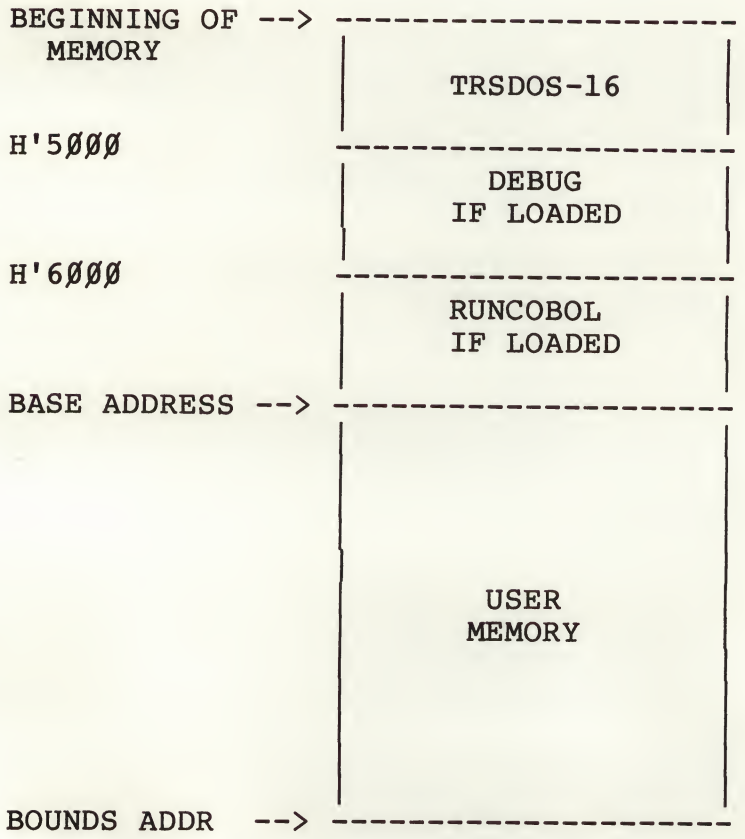
- It determines whether the machine debugger is required. If not, it is eliminated from memory. This gives you an extra 4K of memory.
- It initializes traps and interrupts. This eliminates the need to keep extra code resident in memory.
- It loads in resident programs as specified in the CONFIG16/SYS file.
- It reads the AUTO file and passes it to TRSDOS-16 for execution.

The Configurator is linked in at the end of user memory and occupies 4K of memory. Upon system initialization, it moves itself to the top of physical memory. This is because the resident programs will be loaded at low address, overlaying the original configurator.

Next the Configurator begins to load the resident programs requested in the CONFIG16/SYS file (i.e., DEBUG and RUNCOBOL). It loads these programs sequentially starting at the beginning of user memory and up to the beginning of where the Configurator has relocated itself. This guarantees that after loading is complete, the user has at least 4K of memory available (the size of the Configurator).

After configuration is complete, the Configurator is no longer neccessary and is overwritten.

APPENDIX C / Memory Map



MEMORY CHART

User memory begins at H'5ØØØ if the Debugger is not configured and at H'6ØØØ if the Debugger is configured.

APPENDIX D / ASCII Character Codes

Code		Character	
Dec.	Hex.	Keyboard	Video Display
00	00	HOLD	
01	01	F1 CTRL A	Turns on blinking cursor
02	02	F2 CTRL B	Turns off cursor
03	03	BREAK CTRL C	
04	04	CTRL D	Turns on steady cursor
05	05	CTRL E	
06	06	CTRL F	
07	07	CTRL G	
08	08	BACKSPACE CTRL H	Backspaces cursor and erases character
09	09	TAB CTRL I	Advances cursor to next 8-character boundary
10	0A	CTRL J	Line feed
11	0B	CTRL K	Cursor to previous line
12	0C	CTRL L	
13	0D	ENTER CTRL M	Carriage return
14	0E	CTRL N	Dual routing on
15	0F	CTRL O	Dual routing off
16	10	CTRL P	
17	11	CTRL Q	
18	12	CTRL R	
19	13	CTRL S	
20	14	CTRL T	Homes cursor to upper left
21	15	CTRL U	
22	16	CTRL V	
23	17	CTRL W	Erases to end of line
24	18	CTRL X	Erases to end of screen
25	19	CTRL Y	Sets white-on-black mode
26	1A	CTRL Z	Sets black-on-white mode
27	1B	ESC	Clears screen, homes cursor

*BREAK is always intercepted. It will never return a code 3 to the user program.

Code		Character	
Dec.	Hex.	Keyboard	Video Display
28	1C	←	Moves cursor back
29	1D	→	Moves cursor forward
30	1E	↑	Sets 80-character mode and clears Display
31	1F	↓	Sets 40-character mode and clears Display
32	20	SPACE BAR	ø
33	21	!	!
34	22	"	"
35	23	#	#
36	24	$	$
37	25	%	%
38	26	&	&
39	27	'	'
40	28	(	(
41	29	)	)
42	2A	*	*
43	2B	+	+
44	2C	,	,
45	2D	-	-
46	2E	.	.
47	2F	/	/
48	30	Ø	Ø
49	31	1	1
50	32	2	2
51	33	3	3
52	34	4	4
53	35	5	5
54	36	6	6
55	37	7	7
56	38	8	8
57	39	9	9
58	3A	:	:
59	3B	;	;
60	3C	<	<
61	3D	=	=
62	3E	>	>
63	3F	?	?
64	40	@	@
65	41	A	A
66	42	B	B
67	43	C	C
68	44	D	D
69	45	E	E
70	46	F	F
71	47	G	G

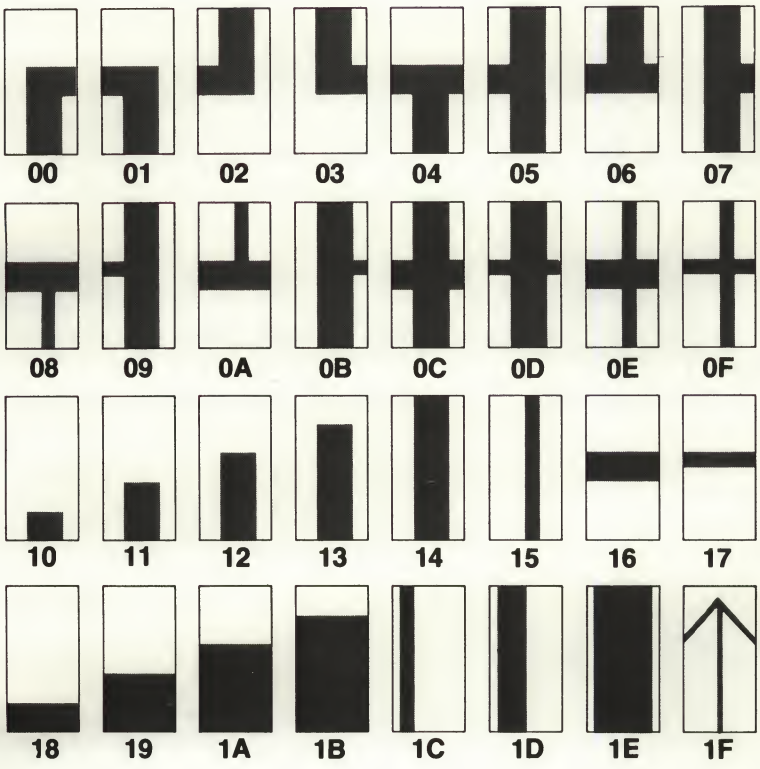
Code		Character	
Dec.	Hex.	Keyboard	Video Display
72	48	H	H
73	49	I	I
74	4A	J	J
75	4B	K	K
76	4C	L	L
77	4D	M	M
78	4E	N	N
79	4F	O	O
80	50	P	P
81	51	Q	Q
82	52	R	R
83	53	S	S
84	54	T	T
85	55	U	U
86	56	V	V
87	57	W	W
88	58	X	X
89	59	Y	Y
90	5A	Z	Z
91	5B	[	[
92	5C	CTRL-9	\
93	5D	]	]
94	5E	^	^
95	5F	_	_
96	60		`
97	61	A	a
98	62	B	b
99	63	C	c
100	64	D	d
101	65	E	e
102	66	F	f
103	67	G	g
104	68	H	h
105	69	I	i
106	6A	J	j
107	6B	K	k
108	6C	L	l
109	6D	M	m
110	6E	N	n
111	6F	O	o
112	70	P	p
113	71	Q	q
114	72	R	r
115	73	S	s
116	74	T	t

Code		Character	
Dec.	Hex.	Keyboard	Video Display
117	75	U	u
118	76	V	v
119	77	W	w
120	78	X	x
121	79	Y	y
122	7A	Z	z
123	7B	{	{
124	7C	CTRL-0	¦
125	7D	}	}
126	7E	CTRL-6	~
127	7F		±
128	80		
129	81		
130	82		
131	83		
132	84		
133	85		
134	86		
135	87		
136	88		
137	89		
138	8A		
139	8B		
140	8C		
141	8D		
142	8E		
143	8F		
144	90		
145	91		
146	92		
147	93		
148	94		
149	95		
150	96		
151	97		
152	98		
153	99		
154	9A		
155	9B		
156	9C		
157	9D		
158	9E		
159	9F		↑
160	A0		ø
161	A1		!
162	A2		"

Code		Character	
Dec.	Hex.	Keyboard	Video Display
163	A3		#
164	A4		$
165	A5		%
166	A6		&
167	A7		'
168	A8		(
169	A9		)
170	AA		*
171	AB		+
172	AC		'
173	AD		–
174	AE		.
175	AF		/
176	B0		Ø
177	B1		1
178	B2		2
179	B3		3
180	B4		4
181	B5		5
182	B6		6
183	B7		7
184	B8		8
185	B9		9
186	BA		:
187	BB		;
188	BC		{
189	BD		=
190	BE		}
191	BF		?
192	C0		@
193	C1		A
194	C2		B
195	C3		C
196	C4		D
197	C5		E
198	C6		F
199	C7		G
200	C8		H
201	C9		I
202	CA		J
203	CB		K
204	CC		L
205	CD		M
206	CE		N
207	CF		O
208	D0		P

Code		Character	
Dec.	Hex.	Keyboard	Video Display
209	D1		Q
210	D2		R
211	D3		S
212	D4		T
213	D5		U
214	D6		V
215	D7		W
216	D8		X
217	D9		Y
218	DA		Z
219	DB		[
220	DC		\
221	DD		]
222	DE		^
223	DF		_
224	E0		`
225	E1		a
226	E2		b
227	E3		c
228	E4		d
229	E5		e
230	E6		f
231	E7		g
232	E8		h
233	E9		i
234	EA		j
235	EB		k
236	EC		l
237	ED		m
238	EE		n
239	EF		o
240	F0	Unused	
241	F1	Unused	
242	F2	Unused	
243	F3	Unused	
244	F4	Unused	
245	F5	Unused	
246	F6	Unused	
247	F7	Unused	
248	F8	Unused	
249	F9	Unused	
250	FA	Unused	
251	FB	Unused	
252	FC		Moves cursor left
253	FD		Moves cursor right
254	FE		Moves cursor up
255	FF		Moves cursor down

APPENDIX E / Graphics Codes



APPENDIX F / MODEL 16 & ENHANCED MODEL II SPECIFICATIONS

SPECIFICATIONS

The Radio Shack TRS-8Ø Model 16 and Enhanced Model II are disk-based computer systems with two major components:

1. A Display Console with up to two built-in, double-sided, double-density floppy disk drives (Model 16) or one built-in, single-sided floppy disk drive (Enhanced Model II).
2. A separate keyboard enclosure which can be positioned for maximum operator comfort and efficiency.

The operating system software is loaded from a system diskette in Drive Ø or Drive 4 by a built-in ROM "bootstrap" program.

PROCESSORS

Input/Output Processor System:

- Z8Ø-A based with 64K bytes of random access memory
- Independent bus can support all the standard system boards
- Emulation mode allows you to execute programs previously developed for the TRS-8Ø Model II without changing them first.

Computational Processor System:

- 68ØØØ based with either 128K or 256K (384K or 512K bytes on a Model 16) of RAM
- Independent bus can support multiple bus masters

The two processors share the computing load from the application programs (the Z8Ø-A based processor performs input/output tasks while the 68ØØØ based processor performs computational tasks).

VIDEO DISPLAY

LSI Controller Chip:

- Frees the input/output (Z8Ø-A based) processor from much of the overhead required to update and maintain the video display.

Four Modes:

- Model 16:
  - green on black (normal)
  - black on green (reversed)
  - 8Ø characters by 24 lines
  - 4Ø characters by 24 lines
- Enhanced Model II:
  - white on black (normal)
  - black on white (reversed)
  - 8Ø characters by 24 lines
  - 4Ø characters by 24 lines

Displayable Characters:

- Full ASCII set
- 32 graphics characters

KEYBOARD

- LSI Controller frees the input/output (Z8Ø-A based) processor from keyboard scan and related tasks
- Located in separate case for convenience
- Connected to Display Console via a built-in cable exiting the bottom front of the Console
- Standard typewriter keys, repeat key and two general-purpose function keys
- Four modes: 1) Unshift; 2) Shift; 3) Caps; 4) Control

FLOPPY DISK DRIVES

Minimum:

- Model 16: One (if system contains a hard disk) or two built-in 8" double-sided floppy disk drives
- Enhanced Model II: One built-in 8" single-sided floppy disk drive

Maximum:

- Model 16: Two built-in and two external 8", double-sided floppy disk drives (Disk Expansion Unit needed for two external drives)
- Enhanced Model II: One built-in and three external 8" single-sided floppy disk drives (Disk Expansion Unit needed for three external drives)

Storage Capacity:

- 1,256,7Ø4 bytes per double-sided diskette (for User Data Capacity, see Operating System Manual)
- 625,92Ø bytes per single-sided diskette (for User Data Capacity, see Operating System Manual)

Diskette Organization:

- 154 tracks per double-sided diskette, 77 tracks per single-sided diskette
- 32 (Ø-31) sectors per track -- will vary with operating system software. See TRSDOS Reference Manual, Technical Information section for more details.
- 256 bytes per sector (except track Ø which has 128 bytes per sector) -- varies with operating system software. See TRSDOS-16 and the TRSDOS/Model II Reference Manuals, Technical Information sections for more details.

Data Transfer Rate:

- 5ØØ,ØØØ bits per second (except track Ø which has 25Ø,ØØØ bps)

Required Media:

- Model 16: Radio Shack Double or Single-sided, 8" Floppy Diskettes
- Enhanced Model II: Radio Shack Single-sided, 8" Floppy Diskettes

Preventative Maintenance Interval:

- Typical usage (3,ØØØ Power-on hours per year): Every 8ØØØ Power-On Hours
- Heavy usage (8,ØØØ Power-on hours per year): Every 5ØØØ Power-On Hours

Diskette Life:

- 3.5 million passes per track
- Usually limited by improper handling. Follow handling recommendations for maximum use.

POWER SUPPLY

Power Requirements:

- 105 - 130 VAC, 60 Hz
- 240 VAC, 50 Hz (Australian)
- 220 VAC, 50 Hz (European)
- Grounded outlet

Maximum Current Drain:

- 2.0 Amps

Typical Current Drain:

- 1.5 Amps

OPERATING TEMPERATURE

- 32 to 110 degrees Fahrenheit
- 0 to 43 degrees Centigrade

PERIPHERAL INTERFACES

Standard:

- Serial port A (RS232-C)
- Serial port B (RS232-C)
- Parallel input/output channel, for connection to TRS-80 standard parallel interface line printers
- Floppy disk input/output channel for connection of a Disk Expansion Unit

Optional:

- Hard Disk Drive Interface
- ARCNET Interface
- Graphic Board

Serial Interface

Two Channels

- Channel A allows asynchronous or synchronous

transmission.

- Channel B allows asynchronous transmission only.
- Both conform to the RS-232-C standard.
- Both use the DB-25 connectors on the back of the Display Console.

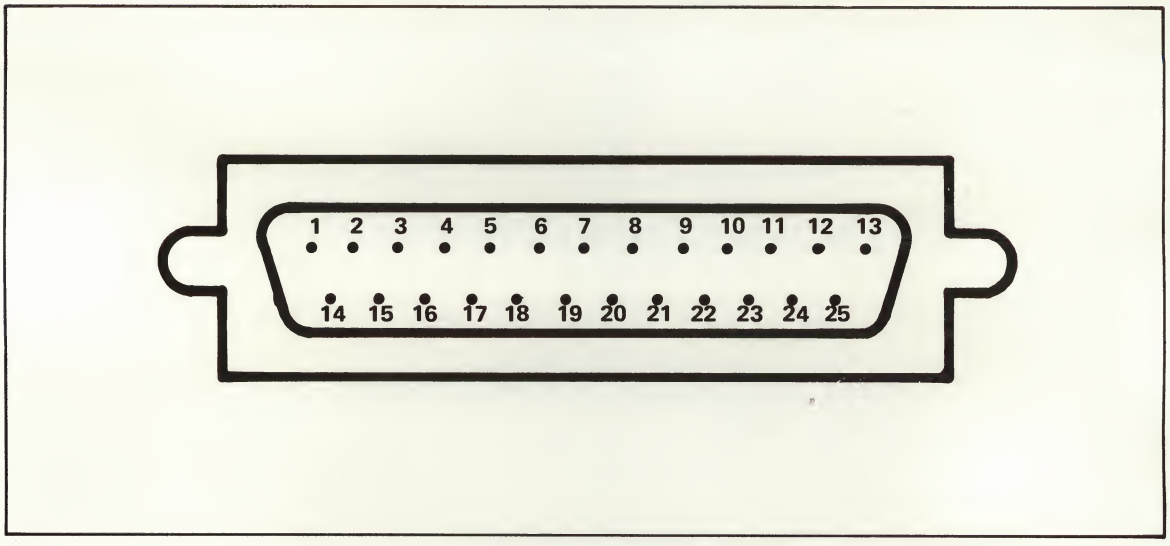
The DB-25 connector pin-outs and signals available are listed below.

CHANNEL A

STANDARD RS-232C SIGNAL	PIN #
I/O TRANSMIT S.E.T.	15
GROUND	1,7
RECEIVED DATA	3
RECEIVER CLOCK	17
TRANSMIT CLOCK	24
DATA SET READY	6
CLEAR-TO-SEND	5
CARRIER DETECT	8
TRANSMIT DATA	2
REQUEST-TO-SEND	4
DATA TERMINAL READY	2Ø

CHANNEL B

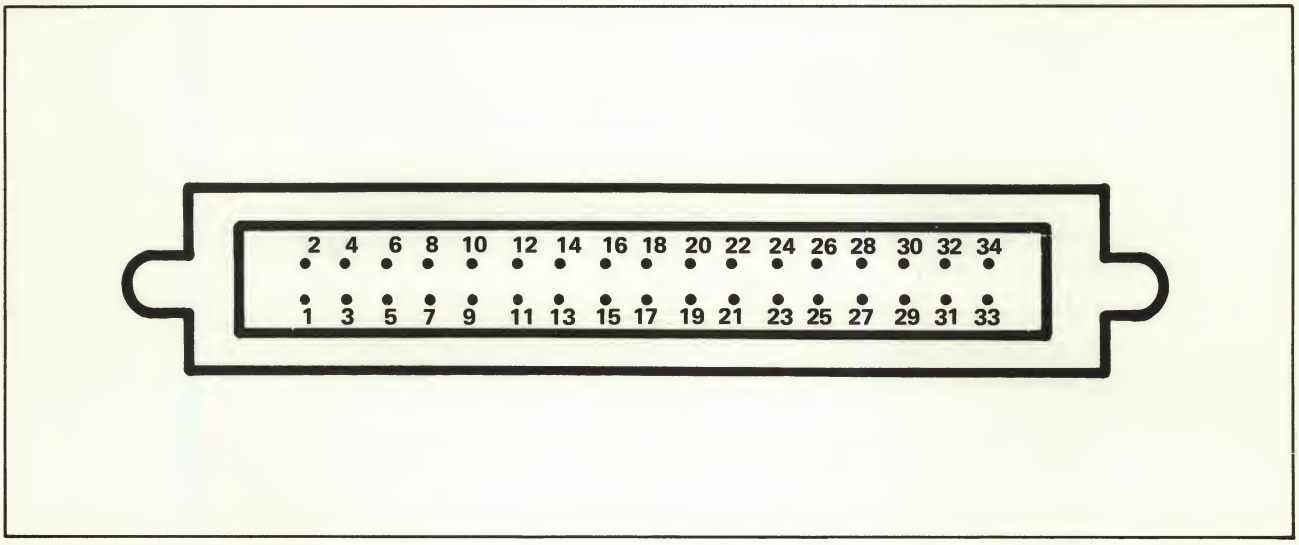
STANDARD RS-232-C SIGNAL	PIN #
GROUND	1,7
RECEIVED DATA	3
RECEIVER XMITTER CLOCK	17
DATA SET READY	6
CLEAR-TO-SEND	5
CARRIER DETECT	8
TRANSMIT DATA	2
REQUEST-TO-SEND	4
DATA TERMINAL READY	2Ø



Parallel Interface

- Connection to a line printer via the 34-pin connector on the back panel of the Display Console.
- Eight data bits are output in parallel.
- Four data bits are input.
- All levels are TTL compatible.

The connector pin-outs and signals available are listed on the next page.



SIGNAL	FUNCTION	PIN
STROBE	1 microsecond pulse to clock the data from processor to printer	1
DATA Ø	Bit Ø (lsb) of output data byte	3
DATA 1	Bit 1 of output data byte	5
DATA 2	Bit 2 of output data byte	7
DATA 3	Bit 3 of output data byte	9
DATA 4	Bit 4 of output data byte	11
DATA 5	Bit 5 of output data byte	13
DATA 6	Bit 6 of output data byte	15
DATA 7	Bit 7 (msb) of output data byte	17
ACK*	Input to Computer from Printer, low indicates data byte received	19
BUSY	Input to Computer from Printer, high indicates busy	21
PAPER EMPTY	Input to Computer from Printer, high indicates no paper -- if Printer doesn't provide this, signal is forced low	23
SELECT	Input to Computer from Printer, high indicates device selected	25
PRIME*	Output to Printer to clear buffer and reset printer logic	26
FAULT*	Input to Computer from Printer low indicates fault (paper empty, light detect, deselect, etc.)	28
GROUND	Common signal ground	2,4,6,8,1Ø,12,14, 16,18,2Ø,22,24, 27,31,33
NC	Not connected	29,3Ø,32,34

*These signals are active-low.

APPENDIX G / SVC Quick Reference List

NAME	DESCRIPTION	NO.
ACTL	Control Channel A	1ØØ
ARCV	Channel A Receive	96
ATX	Channel A Transmit	97
BCTL	Control Channel B	1Ø1
BRCV	Channel B Receive	98
BTX	Channel B Transmit	99
CLOSE	Terminates output to specified file.	42
CLOSEF	Terminates output to all open files except OPENDO file	133
CLRXIT	Clear user memory and jump to TRSDOS-16 Ready	257
CURSOR	Position cursor	1Ø
DATE	Returns the real-time (time/date)	45
DEBUG	Load the Debugger	259
DIRRD	Allows a specific record in a FLR file to be read.	35
DIRWR	Allows a specific record in a FLR file to be read.	44
DISMOUNT	Logically disconnect a MOUNTed disk device	139
DOSCMD	Execute TRSDOS-16 command and return to TRSDOS-16 Ready	27Ø
DUMP	Writes a 68ØØØ format program file from 68ØØØ memory.	13Ø
ERRMSG	Returns an 8Ø-byte descriptive error message for the requested error number	52

NAME	DESCRIPTION	NO.
ERROR	Causes the error message refered to by ERROR NUMBER to be printed on the video display.	39
EXECUTE	Execute program.	263
HLDKEY	Enable / Disable HOLD key.	29
JP2DOS	Jump to TRSDOS-16 Ready.	264
KBCHAR	Strobes the keyboard and returns with or without a character.	4
KBINIT	Initializes the keyboard input driver.	1
KBLINE	Inputs a line from the keyboard into a a buffer and echoes the line to the display.	5
KILL	Deletes the specified file from the directory.	41
LOAD	Loads a 68ØØØ-format program into the user memory.	131
LOCATE	Returns the number of the current record. (i.e. the last record accessed)	33
MOUNT	Logically connects a disk device	138
MOVBUF	Retrieves and stores an 8Ø-byte buffer	267
OPEN	Handles both the creation and opening of files.	4Ø
OPENDO	Opens and creates a special file not closed by CLOSEF	14Ø
PRCHAR	Sends one character to the Printer.	18
PRCTRL	Lets you select various printer options.	95
PRINIT	Initializes the printer driver	17

NAME	DESCRIPTION	NO.
PRLINE	Sends a line to the Printer.	19
READNX	Reads the next record after the current record.	34
RENAME	Changes the name and/or extension of a file	47
RESET	Same as pressing the RESET switch	129
RS232C	Initialize RS-232C Channel	55
SETBRK	Enable / Disable the BREAK key	269
SETTRP	Set or remove trap vectors	266
UNLOCK	Unlocks a specified record	136
VDCHAR	This routine outpus a character at the current cursor position.	8
VDINIT	Initialize the Video Driver	7
VDLINE	Writes a buffer of data to the display	9
VERSION	Get version of Operating System	137
VIDKEY	Sends a prompting message to the display and then waits for a line from the keybd.	12
WRITNX	Writes the next record after the last record accessed. (i.e., sequentially)	43

INDEX

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